

Amendment to Claims

1. Canceled

2. An uninterruptible switching power supply device, comprising:

a main transformer (200) having a primary winding (201) and a secondary winding (202);

a high voltage switching circuit (10) comprising a DC high voltage bus (108), a high voltage switch (109), and an AC input power being coupled to the primary winding (201) through a rectifying circuit (103) and said DC high voltage bus (108);

at least one low voltage switching circuit (20) comprising a battery (400), a low voltage switch (402) being coupled to the positive pole of the battery (400) through a diode (401), and

a tap L from the secondary winding (202) of the main transformer (200); and

a pulse width modulator unit (302) for controlling the high voltage switching circuit (10) and the low voltage switching circuit (20) to operate synchronically; wherein the [a] number of turns N_L from said tap L to the reference ground is determined by the following equation:

$$N_L = V_{Bmax} N_H / V_{Hmin}$$

wherein V_{Bmax} is the maximum discharging voltage of the battery (400) at the tap L, V_{Hmin} is the minimum AC voltage when the battery begins to discharge, and N_H is the number of turns of the primary winding (201) of the main transformer (200).

3. (Previously presented.) An uninterruptible switching power supply device according to claim 2, wherein one end of said DC high voltage bus (108) is coupled to said AC input power through a protection circuit (101), a filtering circuit (102) and said rectifying circuit (103) in turn, and the other end of the bus (108) is coupled to one end (M) of the primary winding (201) of the main transformer (200).

4. (Previously presented.) An uninterruptible switching power supply device according to claim 3, wherein the DC high voltage bus (108) further comprises a power factor correction circuit (110) connected between the rectifying circuit (103) and the primary winding (201) of the main transformer (200) through a diode (106).

5. (Previously presented.) An uninterruptible switching power supply device according to claim 3, wherein said protection circuit (101) comprises a fuse, a surging current suppressor, or a surging voltage suppressor, or a combination thereof.

6. (Currently amended.) An uninterruptible switching power supply device according to claims 2, further 5 comprising a charging/auxiliary power source (900) being coupled to said DC high voltage bus (108) for charging the battery (400) and providing a back-up power for a load.

7. (Previously presented.) An uninterruptible switching power supply device according to claim 2, further comprising a high voltage DC generation circuit including a conversing rectifying means (107) and a filtering capacitor (105) connected to one end of the primary winding (201).

8. (Previously presented.) An uninterruptible switching power supply device according to claim 2, further comprising a DC high voltage output unit including an AC detection circuit (801), an isolation optical coupler (802), a comparator (803) and a relay (800) being connected in series for switching AC output of the relay to DC output when the voltage of the AC input is lower than a predetermined value.

9. (Previously presented.) An uninterruptible switching power supply device according to claim 2, further comprising an isolation transformer (301) through which the PWM unit (302) controls the high voltage switch (109) and the low voltage switch (402) to operate synchronically.

10. (Previously presented.) An uninterruptible switching power supply device according to claim 2, further comprising an interface (700).

11. Canceled.

12. Canceled.

13. Canceled.

14. Canceled.

15. Canceled.